

AMENDMENTS TO THE SPECIFICATION

Page 3, first full paragraph:

U.S. Pat No. 6,146,020 6,164,020 to Nitch teaches a gutter screen for preventing the accumulation of debris within a gutter. Nitch teaches a gutter screen that has a plurality of v-shaped bars positioned to run above and generally parallel to the gutter, disclosed in the ABSTRACT. Nitch teaches that the unique shape of the bars minimize the surface area of the underside of the screen decreases water tension on the underside of the screen and postulates that this decreases the ability of water to accumulate on the underside of the screen which promotes the pulling of water into the gutter, disclosed in Col. 2 lines 45 through 50. Such a device can be shown to eventually allow debris to accumulate within the spaces between v-shaped bars. Such a device can additionally be shown to allow the forward channeling of water to occur as an underflow from tip to tip of the downward most portion of the v-shaped bars due to their close spacing and lack of a length of downward extension that would provide a greater directed downward flow of water into the underlying gutter. This and other prior art do not recognize that water adhesion surfaces extending downward from a planar surface into a rain gutter in a height staggered manner or that are separated by a minimum of one inch provide greater siphoning action and are less likely to be overcome by a forward channeling of under flowing water on the underside of surfaces that receive water through perforations or open channels than is reliance on a lesser amount of water adhesion on the underside of perforated surfaces or screens with bottom most water dispersing areas that are closely spaced and follow mostly horizontally linear or follow a linear path that angles downward from the rear most portion of a gutter guard to the front lip of a rain gutter.

Allowing for greater spacing of rods or fins or water channeling paths or staggering and/or extending the height of rods or fins so that they extend to a depth that the volume of water they channel downward overcomes by sheer weight and gravity an opposing underflow and continues a downward flow into an underlying gutter has not been found to be a simple matter of anticipation, or design choice by those skilled in the arts. Rather, it has proved to be unclaimed in disclosed prior art and untested in the field with the exception of the Leaffilter.RTM. gutter guard which has proved to be very efficient at channeling water downward into a rain gutter while disallowing either the rain gutter or the gutter guard to clog or exhibit an overflow of water. Nitch teaches that fine screens allow for water run-off and are less capable of receiving water than other structural components such as bars or ribs, disclosed in Col. 1 lines 33-35. This and other prior art such as U.S. Pat No. 6,463,700 to Davis do not recognize that fine screens can be shown to exhibit great water permeability and downward water channeling properties when contacting ovaled or angled edged surfaces resting on downward extending legs as is disclosed in U.S. Pat. No. 6,598,352 to Higginbotham, Col. 18 lines 26-67, Col. 19 lines 1-54.

Page 5, first full paragraph:

U.S. Pat No 5,755,061 to Chen teaches a rain cover that includes pairs of adjacent fins separated by a uniform traverse gap that significantly increases the return of water to the gutter by surface tension with the fin walls, disclosed in the ABSTRACT. As occurs with U.S. Patent No. 6,146,020, copious amounts of roof runoff may negate the intended effect of water returning to the gutter allowing for forward flow of water past the gutter. The bottom terminal points of the fin walls

Chen ~~Teaches~~ teaches exist in the same linear plane as do the bottom terminal points of the rods Nitch teaches in U.S. Patent No. 6,146,020 .

This allows a forward underflow (beneath the topmost surface of a perforated or open channelled plane) of water to occur. In my U.S. Patent No. 6,598,352 it is disclosed that such forward rather than downward flow of water has been shown to cease if downward extending planes or rods of varying heights, disallowing a linear channeling path for water to follow, and sufficiently spaced are employed beneath the top most surface of water receiving areas but the disclosed preferred embodiment has been shown costly to manufacture.

Page 6, second full paragraph:

U.S. Pat. No. 5,459,350 5,459,965, & 5,181,350 to Meckstroth, U.S. Pat. No. 5,491,998 to Hansen, U.S. Pat. No. 4,757,649 to Vahldieck and in similar “reverse-curved” inventions that rely on “reverse-curved” surfaces channeling water into an open channel have been known to disallow entrance of rainwater into the water-receiving channels. Albracht’s as well as previous and succeeding similar inventions have therefore notably avoided the utilization of filter insertions. What may appear as a logical anticipation by such inventions at first glance, (inserting of a filter mesh or material into the channel), has been shown to be undesirable and ineffective across a broad spectrum of filtering materials: Employing insertable filters into such inventions has not been found to be a simple matter of anticipation, or design choice of filter medium by those skilled in the arts. Rather, it has proved to be an ineffective option, with any known filter medium, when attempted in the field. Such attempts, in the field, have demonstrated that the filter mediums will eventually require manual cleaning.

Page 12, first full paragraph:

U.S. Pat. No. 5,956,904 to Gentry teaches a first fine screen having mesh openings affixed to an underlying screen of larger openings. Both screens are elastically deformable to permit a user to compress the invention for insertion into a rain gutter. Gentry, as Rees, recognizes the inability of prior art to prevent entrance of finer debris into a rain gutter, and Gentry, as Rees, relies on a much finer screen mesh than is employed by prior art to achieve prevention of finer debris entrance into a rain gutter. In both the Gentry and Rees prior art, and their improvements over less effective filter mediums of previous prior art, it becomes apparent that anticipation of improved filter medium or configurations is not viewed as a matter of simple anticipation of prior art which has, or could, employ filter medium. It becomes apparent that improved filtering methods may be viewed as ~~patenable~~ unique inventions in and of themselves and not necessarily an anticipation or matter of design choice of a better filter medium or method being applied to or substituted within prior art that does or could employ filter medium. However, though Rees and Gentry did achieve finer filtration over filter medium utilized in prior art, their inventions also exhibit a tendency to channel water past an underlying gutter and/or to heal over with finer dirt, pollen, and other pollutants and clog thereby requiring manual cleaning. Additionally, when filter medium is applied to or rested upon planar perforated or screen meshed surfaces, there is a notable tendency for the underlying perforated plane or screen to channel water past the gutter where it will then spill to the ground. ~~I~~ It has also been noted that prior art listed herein exhibits a tendency to allow filter cloth mediums to sag into the opening of their underlying supporting structures. To compensate for forward channeling of water, prior art embodies open apertures spaced too distantly,

or allows the apertures themselves to encompass too large an area, thereby allowing the sagging of overlying filter membranes and cloths. Such sagging creates pockets wherein debris tends to settle and enmesh.

Page 16, first paragraph:

Prior art that has relied on reverse curved surfaces channeling water inside a rain gutter due to surface tension, of varied configurations and pluralities, arranged longitudinally, have been noted to lose their surface tension feature as pollen, oil, scum, ~~Eventually~~ eventually adhere to them. Additionally, multi-channeled embodiments of longitudinal reverse curve prior art have been noted to allow their water receiving channels to become packed with pine needles, oak tassels, other debris, and eventually clog disallowing the free passage of water into a rain gutter. Examples of such prior art are seen in ~~the a~~ commercial product ~~GUTTER HELMET.RTM.~~ manufactured by American metal products and sold by Mr. Fix It of Richmond, Va. In this and similar Commercial products, dirt and mildew can build up on the bull-nose of the curve preventing water from entering the gutter. Also ~~ENGLERT'S LEAFGUARD.RTM.~~ manufactured and distributed by Englert Inc. of Perthambey N.J. and ~~K GUARD.RTM.~~ manufactured and distributed by KNUDSON INC. of Colorado are similarly noted to lose their water channeling properties due to dirt buildup. These commercial products state such, in literature to homeowners that advises them on the proper method of cleaning and maintaining their products.

Page 17, delete lines 6-20.

Page 18, after "SUMMARY" and before the first paragraph, insert:

Accordingly, it is an object of the present invention to provide a gutter shield that permits drainage of water runoff into the gutter trench without debris becoming entrenched or embedded within the surface of the device itself and that employs a filtration membrane configuration that possesses sufficient self-cleaning properties that prevent the buildup of scum, oil, dirt, pollen, and pollutants that necessitate eventual manual cleaning as is almost always the case with prior art.

Another object of the present invention is to provide a gutter shield that redirects water and self-cleans as effectively has the Leaffilter.RTM. gutter shield has been shown to do but do so at a lower cost of manufacture.

Another object of the present invention is to provide a gutter shield that will accept more water run-off into a five inch K-style rain gutter than such a gutter's downspout opening is able to drain before allowing the rain gutter to overflow (in instances where a single three-inch by five-inch downspout is installed to service 600 square feet of roofing surface).

Other objects will appear hereinafter.

Page 24, lines 3 and 4:

FIG. 12 is an exploded view of a water directing channel component † of the present invention exhibiting walls of the channel crimped together.

Page 24, line 11:

FIG. 17 & 18 are top views of the a preferred embodiment of the present invention.

Page 24, lines 16-18:

FIG. 23 is a general pictorial view, partial in cross section, illustrating a gutter cover according to the present invention and installed above a conventional gutter adjacent to a ~~Conventional conventional~~ building.

Page 25, line 28:

25, 25a 25a-c Decoiling Cylinder

Page 28, between lines 10 and 11, insert:

As shown in Figs. 1 and 25, the screen 1, can have diamond shaped water receiving openings 51 having angled metal walls 52. The filtering membrane 3 can contact the top surface of the angled metal walls such that a point of contact forms angles greater than or less than 90 degrees between the bottom surface of the filtering membrane 3 and the top surface of the angled metal walls. The metal walls can be angled approximately 30-40 degrees whereby multi-angled redirection of forward water flow downward into the gutter is realized aiding siphoning and self-cleaning properties of the gutter screen. The metal walls can be angled downward and rearward from the forward longitudinal edge of the gutter screen whereby forward flow of water is further limited and redirected downward. The width of the diamond shaped water receiving openings 51 can be equal to or greater than 3/8 inch whereby water bridging paths across the water receiving openings and resulting forward flow of water is diminished.

Page 29, first full paragraph:

Referring to **Figure 3**, adhesive strips **4** are applied at each edge and at an approximate center location on the underside of filter membrane **3**. This process may be accomplished at a fabric mill at the time of cloth manufacture and is one method of affixing filtering membrane **3** to underlying screen **1**. Referring to **Figure 4** liquefied adhesive paths **5** are sprayed or otherwise applied to the top surface of screen **1** where they then are made to contact the underside of filter membrane **3** as an alternate method (to adhesive strips) of affixing filter membrane **3** to underling screen **1**. The spraying would be accomplished at the site of the roll forming merger of membrane **3** to underlying screen **1** as is illustrated in **Figure 19**: spraying head ~~27~~ **41** spraying liquefied adhesive **5** to the top surface of screen **1**

Page 29, second full paragraph:

Referring to **Figure 22** the filter membrane **3** wound on a spool **25a**, may be unwound and applied and pressed onto the top surface of gutter screen **1**, by tensioning roller bars **26a**, **26b**, and **26c** as is illustrated. The tensioning bars are intended to position the filter membrane **3** in place as the adhesive strips (or narrow paths of adhesive spray) temporarily secure the filter membrane to the gutter screen **1** allowing permanent securing sleeves **6** and **7** supplied by decoiling cylinders **25b**, **25c** to be roll formed and crimped on to sides of filter screen **1** and membrane **3** by tooled dies **27**, **27a**, **27b**, **27c**, **27d**, & **27e**.

Page 31, first paragraph:

The invention offers improvement over prior art in that the junctured or warp-knit construction of both screen **1** and membrane **2**, when joined and achieving as many points of contact as possible exhibits greater water permeability than has been seen in prior articles employing fine filtration membrane or cloths whose thread pattern is not so constructed: The invention also offers improvement over prior art that employs filtering screens or cloths, in different embodiments, in that the present invention exposes greater surface area, per rear to forward lateral inch, of water permeable membrane (that is able to effectively direct water flow) to oncoming rain water roof runoff by means of the present invention's downward extensions **2**.

Page 32, first full paragraph:

Referring to **Figure 19**, a spray jet **27 41** spraying a quick drying weak adhesive **5** onto the top surface of gutter screen **1** is shown as an alternative way of temporarily fastening and holding in place the filter cloth membrane **3** until sleeves **5 6 and 7** are crimped onto the edges of filter cloth membrane **3** and gutter screen **1** achieving a permanent fastening of the filter membrane to the gutter screen.

Paragraph bridging pages 32 and 33:

Referring to Figures **10, 11, & 12** it is illustrated that membrane **3a** is roll formed down into channel **2**, (illustrated in the exploded view of Figure 11). Figure **12** illustrates that channel **2** is then crimped together so that membrane **3** and screen **1** contact each other within the well of channel **2**. This embodiment of channel **two 2** is another, less costly, method of achieving

“downward extending legs”, disclosed in U.S. Pat. No 6,598,352 Column 13 lines 40 through 47, that break the forward flow of water and redirect water away from an overlying filtering membrane and also serves to further secure membrane 3 to underlying screen 1. A downward curve of the combined screen 1 and membrane 3 is created at the top of each “leg” of channel two 2 and is another, less costly, method of achieving “oval ellipses”, disclosed in U.S. Pat. No. 6,598,352 Column 13 lines 47 through 51, that redirect water away from an overlying filtering membrane to underlying “downward extending legs”. This embodiment of channel 2 additionally creates a honey-combed porous plane that presents a great number of downward flow paths to water which is traveling the surface of an upper plane the channels 2 are connected to.

Page 34, second full paragraph:

Referring to figure 14 it is illustrated that two indented channels 14 40 lie in plane 10 Of of rear channel 9. These channels may serve to act as flex or adjusting points and to enable heating cables to be inserted into them, if desired.

Page 34, third full paragraph:

Referring to figure 16 an exploded view of rear channels attachment 14 is seen. Plane 22 of rear channels attachment 14 will can contact a fascia board and create a rear to forward tension to secure the present invention into the top open end of a rain gutter.

Paragraph bridging pages 34 and 35:

Figures 14 and 17 illustrate the a preferred embodiment of the present invention: A cloth filtering membrane 3, with openings limited to no larger than 80 microns and of junctured or warp knit construction, is roll formed onto the top surface of supporting screen 1 and down into channels 2 and then roll formed around the lateral edges of support screen 1 and subsequently crimped in place near the later edges of 1 and 3, (as illustrated in Figure 10). Channels 2 extend to lengths not less than $\frac{3}{4}$ inch and are crimped tightly together so that each side wall of the channels physically contact each other creating a micro-porous honey-combed downward extending plane. Testing has indicated that channels 2 begin to forward channel water on the underside of 1 when their length is less than $\frac{3}{4}$ inch. A z-shaped roll-formed strip 6 is then crimped onto the forward lateral edge of the present invention: 6 will act to secure membrane 3 to underlying support skeleton 1 as well as serve to secure the gutter screen (the present invention) to the forward top lip of a k-style gutter. A choice of rear ~~combined screen 1 and filtering membrane 3~~. The attachments 14 and 9 may then act to further secure membrane 3 to screen 1. Additionally, the attachments allow the present invention 32 to act as a rain gutter screen that may be inserted wholly into the top of a rain gutter, resting on securing spikes or gutter hangars, and held in place by rear to forward tension (when 14 is chosen as the rear attachment) as is illustrated in Figure 23, or to serve as a gutter screen that allows for the insertion of it's rear attachment 9 beneath a roofing membrane or shingles to secure the present invention in place as is illustrated in Figure 24.

Paragraph bridging page 37 and 38:

It is illustrated in Figure 23 that the present invention may be inserted or snapped into the top open end of a rain gutter and remain in place by a rear to forward tension existing across plane 32 that is created by attachment 9 14 contacting fascia board 33 and 6 contacting the top upper lip 30 of a k-style gutter. 9 Attachment 14 rests on an underlying hangar or spike and may be notched out to fit over them if necessary to maintain a constant level plane across sections of the invention as it is installed. Many building owners prefer that shingles or roof membranes not be lifted and disturbed due to the possible voiding of shingle warranties, and also prefer a gutter guard to install in a fashion that does not allow it to contact a building's sub roof : much prior art requires such installation.

Also, many homeowners find the appearance of a gutter guard covering the first row of shingles on their home to be unattractive. In these instances, an installer in the field may snap ~~attacheement~~⁹ attachment 14 onto the rear edge of plane 32.

Page 38, first full paragraph:

In some instances, a home or building owner may desire a "wholly inside the gutter" installation as is illustrated in figure 23, but certain sections of a rain gutter may have shingles extending down into a gutter, or straps that extend from a subroof down into the gutter or onto its top front lip, or the gutter may have a cable or other wire directly over it and passing thought the fascia board 33 it is attached to, or a drip edge may extend down into a gutter making the installation of a "wholly inside the gutter" gutter guard difficult or impossible. In these instances, an installer may opt to snap or place attachment 14 9 onto the rear lateral plane of 32 and continue installation with a matched product.